MAL'NICHUK, V.M.[Mel'nychuk, V.M.]

Intensity of transpiration in Hylocomium splendens (Hedw.) Bryol. Eur. from different habitats. Ukr. bot. zhur. 18 no.1:42-48 '61. (MIRA 14:3)

1. L'vovskiy nauchno-prirodovedcheskiy muzey AN USSR.
(Mosses) (Plants—Transpiration)

MALNEVICH M.S.

ATROSHENKO, V.S., ~~MALNEVITCH~~, M.S., FEIGELSON, E.M.

"Calculation of the brightness of the scattering light in the atmosphere in the case of anisotropic scattering."

Report submitted in connection with the Symposium on Radiation. Vienna, Austria 14-19 Aug 1961.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031900042-6

ACC NR: AF7003220

large interaction energy (proportional to $r^{-3}$) between molecules of different electronic states, and a corresponding deviation of the gas from ideal behavior at relatively small concentrations. The possibility of an excited gas breaking up into two phases with different relative contents of excited molecules is demonstrated. One of these phases can become condensed, thus resulting in nonradiative de-excitation of the system, followed by a change in the equation of state of these phases and repeated evaporation. Such a process provides a unique mechanism of transforming the electron-excitation energy of the gas into heat, and can play an important role in gas lasers. Orig. art. has: 3 figures and 28 formulas.

SUB CODE: 20/ SUBM DATE: 24May66/ ORIG REF: 008/ OTH REF: 003

Card 2/2

ACC NR: AP7003220 SOURCE CODE: UR/0056/66/051/006/1811/1820

AUTHOR: Mal'nev, V. N.; Pekar, S. I.

ORG: Kiev State University (Kiyevskiy gosudarstvennyy universitet)

TITLE: Intermolecular interaction and the equation of state of a highly excited gas

SOURCE: Zh eksper i teor fiz, v. 51, no. 6, 1966, 1811-1820

TOPIC TAGS: molecular interaction, excited state, equation of state, dipole interaction, Van der Waals force, ideal gas, laser r and d

ABSTRACT: The authors consider a gas with sufficiently high molecule concentration (such as at atmospheric pressure), when the average distance between molecules is much shorter than the wavelength of the light absorbed by these molecules. Unlike in earlier investigations, the case is considered when a large percentage of the molecules is excited to the same electron energy levels. It is shown that the dipole-dipole interaction of two identical molecules situated at different energy levels is inversely proportional to the cube of the distance and does not vanish upon averaging over all possible orientations of the molecular dipoles. This interaction makes an appreciable contribution to thermodynamic functions and the equation of state of the excited gas and can exceed the ordinary Van der Waals force and lead to deviation of the gas from ideal behavior at pressures that are not very large, and to its condensation. Calculations are made for the case of monotonic molecules and it is shown that such a highly excited gas has several anomalous features, namely an anomalously

Card 1/2

MAL'NEV, P.P. [Mal'niev, P.P.], inzh.; FEDORENKO, F.G. [Fedorenko, F.H.], inzh.

Self-sharpening segments of a cutting apparatus. Mekh. sil'.hosp. 14 no.7:8 Jl '63. (MIRA 17:2)

MAL'NEV, P.P., inzh.

Machine for spreading herbicides. Trakt.i sel'khozmash. no.8:46-47 Ag '62. (MIRA 15:8)

1. Ukrainskaya mashinoispytatel'naya stantsiya.
(Herbicides) (Spraying and dusting equipment)

MAL'NEV, P.P. [Mal'niev, P.P.]

Bin and air heater for corn drying. Mekh. sil'.hosp. 12 no.8: 8-11 Ag '61. (MIRA 14:7)

1. Starshiy inzhener Ukrainskoy mashinoispytatel'skoy stantsii.
(Corn (Maize))--Drying)

MAL'NEV, P.P., inzh.

KKKh-Z corn combine. Trakt. i sel'khozmash. 30 no.11:29-30 N '60.

1. Ukrainskaya mashinoispytatel'naya stantsiya.
(Corn (Maize)--Harvesting)

MAL'NEV, P., inzh.

Results of testing the SKGN-6A drill. Trakt. i sel'khozmash. 30 no.9:36-37 S '60. (MIRA 13:9)

1. Ukrainskaya mashinoispytatel'naya stantsiya.
(Drill (Agricultural machinery)--Testing)

L 22934-66 EWT(1) LJP(c) GG

ACC NR: AP6012850 SOURCE CODE: UR/0368/66/004/004/0298/0301

AUTHOR: Kremenchugskiy, L. S.; Lysenko, V. S.; Mal'nev, A. F.; Roytsina, O. V. 51 B

ORG: none

TITLE: Improvement of spectral characteristics of high-resistance thermal radiation detectors 21

SOURCE: Zhurnal prikladnoy spektroskopii, v. 4, no. 4, 1966, 298-301

TOPIC TAGS: thermal radiation detector, IR radiation, IR sensor, IR detection

ABSTRACT: An improved method is proposed for the construction of high-resistance thermal-radiation detectors which use gold-black as the infrared absorber. Because of its poor adhesive properties, gold-black cannot be deposited directly on the sensitive material, but must be deposited on an interleafing layer, which causes high heat losses. Calculations are presented to demonstrate that these losses can be reduced to an insignificant amount if the interleafing layer is made of dielectrics such as beryllium- or aluminum-oxides, which are good heat conductors, and if the layer's thickness is much less than the length of the incident heat wave. Experimental data are in good agreement with the theory. Orig. art. has: 4 formulas, 2 tables, and 1 figure. [ZL]

SUB CODE: 20/ SUBM DATE: 02Apr65/ ORIG REF: 001/ OTH REF: 004/ ATD PRESS: 4237

Card 1/1 90 UDC: 621.317.794

ACC NR: AP7001958

The zonal sensitivity of detectors made of $BaTiO_3$ single crystals and ceramics and triglycinsulfate crystals were investigated. Sensitive areas of the samples ranged in size from 80 to 100 $mm^2$. Sensitivity distribution over these areas was measured by a light probe 0.15—1 mm in diameter. When measured with a 0.15-mm probe, sensitivity varied from its maximum value by up to 25% for ceramics and up to 75% for single crystals at isolated points.

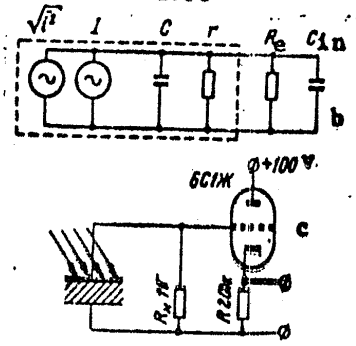
These studies also showed that large detectors made of $BaTiO_3$ ceramics exhibited the most uniform sensitivity (threshold sensitivity, $5 \times 10^{-9}$ w/cps$^{1/2}$). Thermoelectric detectors made of triglycinsulfate single crystals had a greater, although less uniform, sensitivity ($2 \times 10^{-9}$ w/cps$^{1/2}$).

It is noted that these thermal radiation detectors have significant advantages over other types when large-area sensitive elements are required. Orig. art. has: 3 figures. [FSB: v. 3, no. 2]

SUB CODE: 20 / SUBM DATE: 24Nov65 / ORIG REF: 004 / OTH REF: 003

Card 3/3

ACC NR: AP7001958




b) Equivalent circuit of the detector:
$\sqrt{i^2}$ - noise current generator; I - thermoelectric current generator; C - crystal capacitance; 4 - equivalent loss resistance in the crystal; $R_e$ - load resistance; $C_{in}$ - input capacitance of the tube.

c) Circuit diagram of the detector.

independent over a wide range, and the S/N ratio of the detectors therefore remains practically constant at $f < \tau^{-1}$ and constant radiation flux.

Sensitive elements of the detectors are made of crystals in the form of flat capacitors. Deposited layers (~1000 Å) of silver serve as the electrodes. To obtain a relatively uniform spectral characteristic of a detector in the near and central infrared regions of the spectrum, the electrodes are coated with black gold. The thickness of the crystals (100 $\mu$) is uniform within +3%.

Card 2/3

ACC NR: AP7001958 SOURCE CODE: UR/0120/66/000/006/0169/0171

AUTHOR: Kremenchugskiy, L. S.; Mal'nev, A. F.; Samoylov, V. B.

ORG: Institute of Physics, AN UkrSSR (Institut fiziki AN UkrSSR)

TITLE: Large-area pyroelectric radiation detector

SOURCE: Pribory i tekhnika eksperimenta, no. 6, 1966, 169-171

TOPIC TAGS: thermal radiation detector, thermoelectric phenomenon

ABSTRACT:

High-speed, large thermal radiation detectors with a high threshold sensitivity, a small time constant, and a reliatively uniform zonal sensitivity are described.

An equivalent circuit and a cutaway view of such a detector are shown in Fig. 1. Thermoelectric current I is determined by the speed with which polarization of the crystal is changed under the effect of irradiation. Time constant $\tau$ of the detectors does not exceed 50 $\mu$sec. The mean-square value of the noise current is frequency

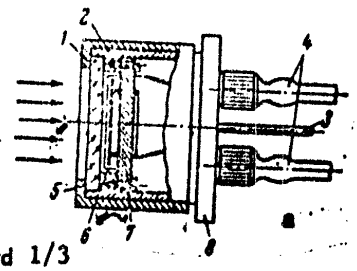



Fig. 1. Large thermal detector

a) Structure of the detector: 1 - Protective jacket; 2 - body; 3 - vacuum inlet; 4 - output terminals; 5 - KBr window; 6 - sensitive element; 7 - support; 8 - lid.

Card 1/3

UDC: 621.384.326.22:536

L 10247-66

ACC NR: AP5028133

ticular pains to reduce the noise level at frequencies above 100 cps. The temperature dependence of the dynamic pyroelectric constant was determined by the method of A.G. Chinoweth (J. Appl. Phys., 27, No.1, 78, (1956)). An aging effect was observed when cycling the detectors between room temperature and 70C; the aging was completed within a few cycles, however, and thereafter the temperature dependence of the pyroelectric constant was reproducible within 5%. The pyroelectric constant reached a maximum at about 90C of from 2.5 to 3 times its room temperature value. Since the dielectric constant also increases with temperature, however, the detectors were only slightly more sensitive at 90° than at room temperature. A preliminary investigation of the stability of the detectors showed no significant changes over a period of six months. The sensitivity threshold of the detectors was between $2 \times 10^{-9}$ and $5 \times 10^{-9}$ W/cps, the time constant was less than 50 μsec, and the Jones figure of merit $M_2$ was greater than 0.5. Orig. art. has: 3 figures. [15]

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 003/ OTH REF: 006/ ATD PRESS: 4161

PC

Card 2/2

L 10247-66 EWT(l)/EWP(e)/EWT(m)/EPF(n)-2/EWP(t)/EWP(b) IJP(c) JD/WW/WH

ACC NR: AP5028133 SOURCE CODE: UR/0048/65/029/011/2110/2112

AUTHOR: Artyukhovskaya, L.M.; Kremenchugskiy, L.S.; Mal'nev, A.F.; Samoylov, V.B.; Yatsenko, A.F.

ORG: Institute of Physics, Academy of Sciences, UkrSSR (Institut fiziki Akademii nauk UkrSSR)

TITLE: Use of the pyroelectric effect of barium titanate ceramics to record low fluxes of thermal radiation /Report, Fourth All-Union Conference on Ferroelectricity held at Rostov-on-the-Don 12-18 September, 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 11, 1965, 2110-2112

TOPIC TAGS: pyroelectricity, pyroelectric detector, barium titanate, ceramic material, transducer, thermal radiation, heat flux pickup

ABSTRACT: A number of thin barium titanate ceramic wafers were produced and tested as pyroelectric detectors of minute, rapidly changing thermal fluxes. Details of the preparation of the detectors are not given. The sensitivity and the noise level were both inversely proportional to the frequency, and the minimum detectable power was nearly independent of frequency for frequencies up to 2 kc. The intrinsic noise of the pyroelectric detector exceeded the Johnson noise of the equivalent RC circuit by not more than 50%. The intrinsic noise of the detector decreased more rapidly with increasing frequency than did the noise level of the input circuit; in designing input circuits for use with pyroelectric detectors, therefore, it is desirable to take par-

Card 1/2

ARTYUKHOVSKAYA, L.M. [Artiukhovs'ka, L.M.]; KREMENCHUGSKIY, L.S. [Kremenchuhs'kyi, L.S.]; MAL'NEV, A.F. [Mal'niev, A.F.]; ROYTSINA, O.V. [Roitsyna, O.V.]

Effect of the size of the receiving area on the principal characteristics of metal vacuum bolometers. Ukr. fiz. zhur. 9 no.11: 1240-1247 N '64 (MIRA 18:1)

1. Institut fiziki AN UkrSSR, Kiyev.

VIZGERT, R.V.; KAL'NEV, A.F. [Mal'nev, A.F.]; PIKHLIMA, T.M.

Infrared absorption spectra of esters of substituted benzene-sulfonic acids and phenol. Ukr. fiz. zhur. 8 no.11:1190-1202 N '64. (MIRA 17:9)

1. Institut fiziki AN UkrSSR, Kiyev.

L 20248-65
ACCESSION NR: AP5000629

for the inertia factor, the opposite is true. [rig. art. has: 5 figures, 2 tables, and 7 formulas.

ASSOCIATION: none

SUBMITTED: 03Mar64 ENCL: 00 SUB CODE: MP

NO REF SOV: 003 OTHER: 003 ATD PRESS: 4162

Card 2/2

L 20248-65 EED-2/EEO-2/EWI(1) Pu-4/Pl-4/Pae-2 IJP(c)/SSD/AFWL/ASD(s)/
ESD(gs) GO
ACCESSION NR: AP5000629 S/0185/64/009/011/1240/1247

AUTHOR: Artyukhovs'ka, L. N. (Artyukhovskaya, L. N.); Kremenchugs'ky*y, L. S. (Kremenchugskiy, L. S.); Hal'nyav, A. F. (Hal'nyav, A. F.); Roytsyna, O. V. (Roytsina, O. V.)

TITLE: Effect of the size of the detection area on the basic characteristics of metal vacuum bolometers

SOURCE: Ukrayins'ky*y fizy*chny*y zhurnal, v. 9, no. 11, 1964, 1240-1247

TOPIC TAGS: metal vacuum bolometer, bolometer, thermal radiation measurement

ABSTRACT: The effect of the size of the detection area of nickel bolometers on the sensitivity and the inertia was investigated. The general case of heat removal from the bolometer either by radiation or by conduction of the film was discussed. It was found that the dependance of bolometer sensitivity on the width of the detecting element is much stronger than it is on the length of the element;

Card 1/2

MAL'NEV, A.F.; KREMENCHUGSKIY, L.S.; BEREZKO, B.N.; SHEVTSOV, L.N.; BOGDEVICH, A.G.; KIRILLOV, G.M.; CHASHECHNIKOVA, I.T.; YARMOLENKO, N.A.; OFENGENDEN, R.G.; SERMAN, V.Z.; DALYUK, Yu.A.; BEREZIN, F.N.; KONENKO, L.D.; SHALEYKO, M.A.; SHEVCHENKO, Yu.S.; STOLYAROV, V.A.; KIRILLOV, G.M.; BOGDEVICH, S.F.; LYSENKO, V.T.; BRASHKIN, N.A.; SKRIPNIK, Yu.A.; GRESHCHENKO, Ye.V.; TUZ, R.M.; SERPILIN, K.L.; GAPCHENKO, L.M.

Abstracts of completed research works. Avtom. i prib. no.3:90-91 Jl-S '62. (MIRA 16:2)

1. Institut fiziki AN UkrSSR (for all except Skripnik, Greshchenko, Tuz, Serpilin, Gapchenko). 2. Kiyevskiy politekhnicheskiy institut (for Skripnik, Greshchenko, Tuz, Serpilin, Gapchenko).

(Research)

VIZGERT, R.V.; MAL'NEV, A.F.; MIKHLINA, I.M.

Effect of the nature and position of substitutes on the infrared spectra of benzenesulfonyl chlorides and benzenesulfonates. Izv. AN SSSR. Ser. fiz. 27 no.7:969-973 '63. (MIRA 16:8)
(Benzenesulfonyl chloride--Spectra)
(Benzenesulfonic acid--Spectra)

L 18944-63
ACCESSION NR: AP3003818

has 4 figures and 4 formulas.

ASSOCIATION: Insty*tut fizy*ky* AN URSR, Kiev (Physics Institute of the Academy of Sciences, UKrSSR, in Kiev)

SUBMITTED: 19Dec62 DATE ACQ: 08Aug63 ENCL: 04

SUB CODE: PH NO REF SOV: 002 OTHER: 001

Card 2/2

L 18944-63 EWT(l)/EWP(q)/EWT(m)/BDS AFFTC/ASD/ESD-3/IJP(C) Pad GG/JD/HW

ACCESSION NR: AP3003818 S/0185/63/008/007/0762/0767

AUTHOR: Kremenchugs'ky*y, L. S.; Mal'nev, A. F.; Samoylov, V. B.

TITLE: Investigation of the temperature dependence of current noise of thin metal film

SOURCE: Ukrayins'ky*y fizy*chny*y zhurnal, v. 8, no. 7, 1963, 762-767

TOPIC TAGS: current noise, thin metal film, nickel, gold, liquid nitrogen temperature, metal film

ABSTRACT: The authors give the electrical diagram of the setup they developed and describe the procedure they used in their investigation of current noises of thin metallic films. They investigated nickel and gold films at a temperature range of 77 to 400 K. The temperature dependence of current noise was established. When temperature was decreased from room temperature to that of liquid nitrogen the mean square of the current noise was reduced by 100. This may not be explained by a decrease in the film resistance during cooling. An empirical equation was developed showing the change in current noise taking place in thin metallic films over a wide range of temperatures. "The authors are grateful to comrades B. N. Ber'ozko and L. N. Shats for their help in adjusting and preparing the installation." Orig. art.

Card 1/8 2

paraffins and naphthenes. The experimental and the theoretical mean absorption coefficients differ by 2.5% at most. Borehole No 350 of the Bitkov deposit contains more isostructures than the fractions of borehole No 310. The fractions of the Dolina mineral oil, not forming complexes with carbamide, consist mainly of ordinary paraffins and are similar to those of borehole No 350 of Bitkov. All these fractions contain no naphthene fractions. The paraffin-naphthene hydrocarbons that form no complexes have different and rather high degrees of ramification. There is 1 table.

S/048/63/027/001/033/043
B125/B102

AUTHORS: Krasnova, S. I., Mal'nev, A. F., Puchkovskaya, G. A., and Sklyar, V. T.

TITLE: Determination of the methyl and methylene groups in narrow paraffin and paraffin naphthene fractions from the infrared absorption spectra

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 27, no. 1, 1963, 98 - 99

TEXT: The qualitative determination of the portion of methyl and methylene groups in narrow paraffin and naphthene fractions (which contain n-paraffins, isoparaffins, and naphthenes) from the mineral oils of Bitkov and Polina is described. The intensity of the absorption bands corresponding to the oscillation frequencies of the groups $CH_3$ and $CH_2$ is assumed to be independent of the remainder of the molecule. The weight percentage of the methyl and methylene groups or of the $CH_2$ groups was determined from the integral intensity of the absorption bands in the ranges 7.14 - 7.44 $\mu$ and 12.5-14.3 $\mu$ as well as those of the 3.38, 3.42, and 7.25 $\mu$ bands for ~20 different

Card 1/2

KREMENCHUGSKIY, L.S. [Kremenchuhs'kyi, L.S.]; MAL'NEV, A.F. [Mal'niev, A.F.]; ROYTSYNA, O.V. [Roitsyna, O.V.]

Dynamic characteristics of vacuum metallic bolometers. Ukr. fiz. zhur. 7 no.12:1298-1308 D '62. (MIRA 15:12)

1. Institut fiziki AN UkrSSR, Kiyev.
(Bolometer)

VIZGERT, R.V. [Vizhert, R.V.]; MAL'NEV, A.F. [Mal'niev, A.F.]; MIKHLINA, I.M.

Effect of the nature and position of the substitute on the infrared spectra of benzosulfochlorides and ethyl esters of benzenesulfonic acid. Ukr.fiz.zhur. 7 no.5:512-514 My '62. (MIRA 16:1)

1. Institut fiziki AN UkrSSR, Kiyev.
(Benzenesulfonic acid--Spectra)

Noise characteristics of signal ... S/185/62/007/001/006/01[illegible] D299/D302

language publication reads as follows: J.U. White, M.D. Liston, JOSA, 40, no. 1, 36, 1950.

ASSOCIATION: Instytut fizyky AN URSR (Institute of Physics of the A... UkrRSR), Kyyiv

SUBMITTED: March 14, 1961

X

Card 3/3

Noise characteristics of signal...

back; by using negative feedback it is possible to reduce the noise level two- to threefold. If fairly large transformers are used, the noise of the input tubes can be easily covered (at frequencies of 15 - 20 cycles); if however, miniaturized input transformers, operating at very low frequencies, are used, this becomes much more difficult. A figure shows the gain factor of transformers with permalloy core. By comparing the obtained data, it was found that the tube 6S4P yielded lowest noise-level. The following graphs are given: Frequency dependence of the gain factor of a transformer, dependence of optimum gain of transformer on its output noise-level, dependence of background noise of transformer on the number of primary windings, and the frequency dependence of pre-amplifier noises (with one of the transformers). The deviation of the measured noise-values from the calculated ones, did not exceed 15 %. Conclusions: It is feasible to design a measuring device with background noise-level of the order of $1 - 2 \cdot 10^{-10}$v at a frequency of 9 - 20 cycles with $\Delta f = 1$ cycle. From the tabulated data and the graphs it is possible to estimate the noises in actual cases. There are 6 figures, 1 table and 5 references: 4 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-

35096

S/185/62/007/001/006/014
D299/D302

9.2510 (1040,1159,1532)

AUTHORS: Yesel'son, M.F., Kremenchuhs'kyy, L.S., and Nal'nyev, A.F.

TITLE: Noise characteristics of signal pre-amplifiers of low-ohmic thermal receivers

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 7, no. 1, 1962, 46 - 52

TEXT: Low-frequency noises were investigated of certain practical pre-amplifier circuits with an input tube operating under floating-grid conditions. The following types of tubes were studied: 6Zh1Zh (6ZhIZh), 6S4P (6S4P), 6N14P (6N14P), and 6N16B (6N16B). The last 2 types were investigated in negative-feedback pre-amplifier circuits. A noise analyzer, operating at the fixed frequencies of 5, 9, 15 and 20 cycles, was used. The noise analyzer consisted of a pre-amplifier, selective amplifier, detector, low-frequency filter and millivoltmeter. Background noises of tubes were investigated as a function of the filament current and the value of the negative feed-

Card 1/3

KRETOV, A. Ye.; KUL'CHITSKAYA, N.Ye.; MAL'NEV, A.F.

Isomerism of N-arylmaleimides. Zhur.ob.khim. 31 no.8:2588-2594 Ag '61. (MIRA 14:8)

1. Dnepropetrovskiy khimiko-tekhnologicheskiy institut.
(Maleimide)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031900042-6

MAL'NEV, A.F. [Mal'niev, A.F.]; YESEL'SON, M.P. [IEsel'son, M.P.]; KREMENCHUGSKIY, L.S. [Kremenchuhs'kyi, L.S.]

Characteristics of measuring devices for IKS-11 and IKS-12 spectrometers with modulation of the radiation flux. Ukr. fiz. zhur. 6 no.6:881-883 N-D '61. (MIRA 16:5)

1. Institut fiziki AN UkrSSR, Kiyev.
(Spectrometer)

Contactless measurement of ...

tuations of the medium. By means of formula (2), it is possible to estimate the influence of each parameter on the accuracy of measurement. By calibrating the scale of the output device directly in temperature degrees of the rotor, higher accuracy of measurment can be achieved. A figure shows the heating- and cooling curves of the electromotor, the power of the radiation, incident on the bolometer being plotted as a function of the time of operation of the electromotor. After 1 hour, the rotor temperature attains 334°K, and changes but little afterwards. The temperature was measured to an accuracy of 1 %, and the sensitivity to temperature changes of the rotor, is 0.1°C. There are 2 figures and 2 Soviet-bloc references.

ASSOCIATION: Instytut fizyky AS UkrRSR (Institute of Physics of the AS UkrRSR, Kyyiv)

Card 3/3

X

Contactless measurement of...

ture of the object can be determined by the approximate formula

$$T_1 = \sqrt{\left(\frac{\pi^2 W}{\sqrt{2\sigma s_1 s_2}} + \frac{\varepsilon_o T_o^4}{d_o^2}\right) d_1^2 \varepsilon_1} \qquad (1)$$

where $T_1$ and $T_o$ are the absolute temperatures of the rotor surface and of the modulator respectively; $\varepsilon_1$, $\varepsilon_o$ - the coefficients (of blackening) of the rotor and of the modulator, W - the effective values of the power of the first harmonic of the modulated radiation which arrives at the bolometer. The sensitivity of the device to changes in the surface temperature of the rotor, can be estimated by the formula

$$\Delta T_1 = \left(\frac{\pi^2 \Delta W}{\sqrt{2\sigma s_1 s_2}} + \frac{4\varepsilon_o T_o^3 \Delta T_o}{d_o^2}\right) \frac{d_1^2}{4T_1^3} \qquad (2)$$

where $\Delta W$ - is the threshold sensitivity and $\Delta T_o$ - temperature fluc-

31446
S/185/61/006/006/028/030
D299/D304

24.1300

AUTHORS: Kremenchuhs'kyy, L.S., and Mal'nyev, A.F.

TITLE: Contactless measurement of temperature of bodies below the red-hot temperature

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 6, no. 6, 1961, 876 - 878

TEXT: The contactless method involves measuring the intensity of heat radiation. The authors developed a device for measuring low energies in the infrared region of the spectrum. A block diagram of the device is shown. The radiation from the investigated surface of the rotor (of an electromotor), arrives at a nickel bolometer, after passing a vibration modulator. The signal, produced by the bolometer, is applied to a preamplifier, then to an amplifier, a synchronous detector and the output device. The synchronous detector is the main selection element of the circuit which separates from the signal spectrum a narrow frequency band (close to the modulation frequency). For higher accuracy, feedback with a calibrated signal is used. If the investigated surface is small, the tempera-

Card 1/3

MAL'NEV, A.F. [Mal'niev, A.F.]; MIKHLINA, I.M.

Using infrared absorption spectra for determining the quantity of oil in paraffins. Ukr.fiz.zhur. 6 no.6:859-861 N-D '61. (MIRA 16:5)

1. Institut fiziki AN UkrSSR, Kiyev.
(Spectrochemistry) (Paraffins)

KRASNOVA, S.I.; MAL'NEV, A.F. [Mal'niev, A.F.]; PUCHKOVSKAYA, G.A. [Puchkivs'ka, H.O.]; SKLYAR, V.T.

Determination of methyl and methylene groups in a narrow-boiling range paraffin-naphthene fraction on the basis of infrared absorption spectra. Ukr.fiz.zhur. 6 no.6:843-846 N-D '61. (MIRA 16:5)

1. Institut fiziki AN UkrSSR, Kiyev.
(Methyl groups--Spectra) (Methylene groups--Spectra)
(Hydrocarbons)

YESEL'SON, M.P. [IEsel'son, M.P.]; KREMENCHUGSKIY, L.S. [Kremenchuhs'kyi, L.S.]; MAL'NEV, A.F. [Mal'niev, A.F.]

Temperature variations of the characteristics of input transformers of low-resistance thermal receivers. Ukr. fiz. zhur. 6 no.3:420-422 My-Je '61. (MIRA 14:8)
(Electric transformers--Thermal properties)

MAL'NEV, A.F.; YESEL'SON, M.P.

Recording unit with low-resistance bolometers for spectroscopic instruments. Prib. i tekh. eksp. 6 no.1:137-140 Ja-F '61. (MIRA 14:9)

1. Institut fiziki AN USSR.
(Electronic instruments)

SKYLAR, V.T.; SAMTSOVA, L.M.; MAL'NEV, A.F.; PUCHKOVSKAYA, G.A.

Asphaltenes and asphategenic acids of some Carpathian oils and bitumens of menilite shales. Geol.nefti i gaza 5 no.6 50-55 Je '61. (MIRA 14:6)

1. UKrNIIProyekt, Ukrainskiy nauchno-issledovatel'skiy geologo-razvedochnyy institut i Institut fiziki AN USSR.
(Carpathian Mountain region--Petroleum--Analysis)

0.465 its value at zero frequency. If the frequency characteristic follows the law $[1 + (2\pi f\tau)^2]^{-\frac{1}{2}}$ the time constant may be determined from measurements at two frequencies. The error in time constant determination is ±10%. Spectral density of noise is determined at various frequencies and currents. Use of the device makes it possible to select optimum conditions of test for the receiver that is to find values of current and frequencies corresponding to the lowest sensitivity threshold. Acknowledgments are expressed to M. P. Yesel'son and V. I. Mel'nikov for their assistance. There are 5 figures and 5 references: 2 Soviet-bloc and 3 non-Soviet-bloc. The references to English language publications read as follows: White, I.U., Liston, M.D., J.O.S.A. 1950, 40, No.2, 93.; Milton, R.M. Chemical Review, 1946, 39, No.3, 419.

resistor which leads to errors of up to ≈ 10%. Thus, the ratio of the receiver noise to that of an equivalent resistor can be measured and the absolute value of noise computed by Nyguist's formula. In the second method an arrangement with high load resistance enables noise to be more accurately measured directly or by comparison with resistors. With thermoelectric devices noise measurement takes place directly. Noise is evaluated from the graph of the recorder or if noise is measured by comparison with a resistor it may be measured from the variation of the indication of the output of an indicating instrument. Threshold sensitivity - the radiation flux producing a signal equal to the noise is estimated from the noise with an error of not more than ±30%. The time constant is measured from the rise of receiver signal after a step input. Square wave modulation is used, with a period about 6-8 times the time constant. The time constant may be measured from frequency characteristics using a 1000 c.p.s. signal for the bridge supply and measuring the output by the valve voltmeter. The time constant $\tau$ is determined from the formula $\tau = 1/2f_o$, where $f_o$ is the frequency at which the signal is

purposes. Power to the devices is supplied by means of an electronically stabilized power supply. The apparatus is mounted on a single base with arrangements to position the radiator appropriately with respect to the receiver. In receiver tests the sensitivity is computed as the ratio of the effective magnitude of the first harmonic of the receiver output signal to the effective magnitude of the first harmonic of the radiation flux with square wave modulation. The radiation input power is calculated from the Stefan-Boltzman law and multiplied by $\sqrt{2}/\pi$. The output is calculated from the apparatus output and the known gain. It is essential to measure under actual conditions of operation the ratio of the input to the preamplifier to the output of a voltage generator equivalent to the receiver. The mean-square noise of the receivers may be measured for low resistance bolometers by one of two methods. In the first, the noise under conditions of operation first with the bolometer in circuit and then with a resistor of equal resistance substituted for the bolometer. It must be taken into account that for the same current the bolometer temperature is higher than that of the

Experimental Apparatus for ...

S/115/61/000/006/005/006
E073/E535

is water cooled and its temperature does not rise by more than 1.5°C. The radiation is modulated by means of a vibrating chopper 7 and falls upon the receiver 9. The receiver circuit is connected to the amplifier by means of tuned matching transformers 2 with a number of primary windings. Amplification is by means of a valve preamplifier 3 and a main valve feedback amplifier 4. The noise level of the measuring apparatus with short-circuited input is $1.1 \times 10^{-10}$ V at a frequency of 9 c.p.s. with an effective pass band of 0.1 c.p.s. The gain of the preamplifier is 190 and the frequency characteristics. The frequency characteristic of both amplifiers is constant within ±5% over the frequency range 3-100 c.p.s. The output of the amplifiers is fed to a phase sensitive detector in the frequency range 3-70 c.p.s. An R.C. oscillator 5 is used to operate the chopper and supplies the reference signal to the detector. At high frequencies a disc chopper is used and the reference signal to the detector is supplied by the photocell 8. An ancillary oscillator at a frequency of 1000 c.p.s. acts as a supply for bolometer bridges. The detector output is recorded by means of a recording millivoltmeter or potentiometer 6. A valve voltmeter 10 and oscillograph 11 are used for monitoring

23469
S/115/61/000/006/005/006
E073/E535

9,6150 (1482)

AUTHORS: Mal'nev, A.F. and Kremenchugskiy, L. S.

TITLE: Experimental Apparatus for the Determination of the Parameters of Thermal Radiation Receivers

PERIODICAL: Izmeritel'naya tekhnika, 1961, No.6, pp. 26-30

TEXT: An apparatus is described for the investigation of the parameters of the thermal radiation receivers in the frequency range 3-70 c.p.s. at signal levels of the order of $10^{-10}$ V. The parameters which can be measured are 1) the mean-square value of noise; 2) the sensitivity to modulated radiation; 3) the threshold sensitivity; 4) the time constant; 5) the spectral density of noise. A block diagram of the apparatus is given in Fig.1. The standard source of radiation 1 is a cylindrical artificial black body consisting of a tube with an electrically heated nichrome spiral. The radiator operates in the temperature range 400-500°K. The heater spiral is wound so as to ensure uniformity of temperature in the cavity. At 450°K the cavity temperature is uniform to within ±5°C. The ratio of the depth of the cavity to the radius of the radiating aperature is 32. The front wall of the radiator

Card 1/6

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E201/E191

A Low-temperature Receiver of Thermal Radiation

with some of the superconducting devices but the best of such devices had better characteristics. The bolometer can be used in infrared radiation receivers, and for studies of emission by low temperature sources.

There are 1 figure, 1 table and 2 references: 1 Soviet and 1 German.

SUBMITTED: April 27, 1960

Card 2/2

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031900042-6

8392h
S/051/60/009/004/024/034
E201/E191

9.4173

AUTHORS: Mal'nev, A.F., and Kremenchugskiy, L.S.

TITLE: A Low-temperature Receiver of Thermal Radiation

PERIODICAL: Optika i spektroskopiya, 1960, Vol 9, No 4, pp 530-531

TEXT: Lowering of the working temperature of metallic bolometers improves their characteristics. Such a low-temperature bolometer was constructed by the authors. It was made of nickel and cooled with liquid nitrogen. Its construction is shown in a figure on p 530, where 1 is a cryostat window, 2 is the bolometer, 3 is a heat-conducting rod, 4 is the internal wall of a liquid-nitrogen container, 5 is the external wall of this container, 6 is a handle, and 7 is an inlet. At the boiling point of liquid nitrogen the temperature coefficient of the bolometer was 8 x $10^{-3}$ $deg^{-1}$, i.e. twice as large as at room temperature. The ohmic resistance of the nickel plate was three times smaller at the temperature of liquid nitrogen than at room temperature. The threshold sensitivity was 20 times lower at 77 °K than at 300 °K. The bolometer was of quality comparable

Card 1/2

MAL'NEV, A.F. [Mal'niev, A.F.]; YESEL'SON, M.P. [IEsel'son, M.P.]

Recording device for a spectrophotometer. Ukr. fiz. zhur. 5 no. 5:640-644 S-O '60. (MIRA 14:4)

1. Institut fiziki AN USSR.
(Spectrometer)

MAL'NEV, A.F. [Mal'niev, A.F.]; KREMENCHUGSKIY, L.S. [Kremenchuhs'kyi, L.S.]; SKACHKO, M.A.

Comparing several receivers of heat radiation. Ukr. fiz. zhur. 5 no. 5:634-639 S-O '60. (MIRA 14:4)

1. Institut fiziki AN USSR.
(Heat--Radiation and adsorption)

the bolometer. The main amplifier includes a synchronous rectifier and an oscillator. The device is supplied by a stabilizer with a two-stage d.c. amplifier. The spectrum of water vapor and carbon dioxide, as registered by the spectrometer VIKS-3 by means of the device, is shown in a figure. The device is used in laboratory investigations in conjunction with the spectrometer VIKS-3 and in plants with the spectrometer VIKS-4. It can be also used in the spectrometers IKS. There are 4 figures and 4 Soviet-bloc references.

ASSOCIATION: Instytut fizyky AN USSR (Physics Institute AS Ukr SSR)

SUBMITTED: November 12, 1959

A measuring device... 26594

one ought to reduce $R_{out}$ and increase the transfer constant $K_t$. $R_{out}$ can be reduced, with fixed $K_t$, if $R_2$ is reduced (i.e. $R_2 < R_1$). A detailed study of this problem shows that the conditions for maximum amplification of a system bridge-transformer and a maximum transfer constant of the bridge circuit are given by the same relationships, viz. $R_2 \ll R_1$: $R_3 \gg R_1$ (i.e. $K_t \to 1$, $R_{out} \to R$); these conditions give the optimum connection of the bolometer (with resistance $R_1$) to the bridge circuit; $R_2$ and $R_3$ denote the resistances of the bridge arms. The total value of $R_1 + R_2$ should be chosen so as not to overload the current source; in practice, $R_3 = (3$ to $5)$ $R_1$ and $R_2 = (0.1$ to $0.3)$ $R_1$. Hence a bolometer with two equal arms does not lead to optimum performance of circuit. The measuring device is described then. A nickel bolometer of 20 Ohm resistance is placed at the focus of a monochromator mirror. The balancing resistors are in the same unit with the pre-amplifier and transformer. The total amplification of the input unit is $2 \cdot 10^5$. The natural noise-level of the device is several times below that of

MAL'NYEV, A.F.

24.3400

26594

S/185/60/005/003/009/020
D274/D303

AUTHORS: Mal'nyev, A.F., Yesel'son, M.P. and Kremenchugs'kyy, L.S.

TITLE: A measuring device for spectral investigations of low energies

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 5, no. 3, 1960, 380-385

TEXT: A device is described which is used with spectrometers and other spectral instruments for the measurement of energies of the order of $10^{-9}$ watt. (Second part of the article). In the first part of the article, the most effective ratio is found for resistances of the bolometer bridge arms. This optimum ratio has not been dealt with in literature. An equivalent circuit is shown of a bolometer bridge with transformer. In the case of optimum matching, the amplification factor of the transformer increases with decreasing $R_{out}$. In choosing the ratio between the bridge arms,

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MAL'NEV, A.F.; YESEL'SON, M.P.

New measuring device for IKS-11 and IKS-12 spectrometers. Ukr. fiz. zhur. 5 no.2:285-286 Mr-Ap '60. (MIRA 13:12)

1. Institut fiziki AN USSR.
(Spectrometer)

A study of six-membered ...

light source. Radiation was interrupted by a modulator with a frequency of 9 hz. During the recording of the spectrum and the rotation of the prism, the apertures of the spectrometer were opened so as to ensure the balancing of the intensity of the globar spectrum according to wavelength. The apparatus was graduated according to absorption spectra of polystyrene, carbon dioxide and water vapor. The product to be studied was placed in a vessel consisting of two plates of rock salt separated by a lead strip 15 $\mu$ thick. Transparency curves were calculated on the basis of the globar spectra and fractions recorded. These curves have absorption bands which are characteristic of benzene nuclei of various substitution types. Interpretation of the absorption spectra shows that the kerosene and gas-oil part of Dolinskaya and Bitkovo oils contains mono-, di-, tri- and possibly tetra-substituted benzenes and cyclohexanes. The similarity observed between spectrograms of fractions which are products of the dehydrogenization of naphthenes and those of fractions containing primary homologues of benzene, indicates that the structures of hydrocarbons of the benzol and cyclohexane series in the oil fractions studied, are of the same type. There are 3 tables, 3 figures and 8 Soviet references. [Abstracter's note: Essentially complete translation]

Card 2/2

34287
S/710/60/000/001/002/004
D055/D113

11.1210

AUTHORS: Sklyar, V.T.; Lizogub, A.P.; Mal'nev, A.F.; Puchkovskaya, G.A.

TITLE: A study of six-membered aromatic and naphthene hydrocarbons according to infra-red absorption spectra

SOURCE: Kiyev. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut ugol'noy, rudnoy, neftyanoy i gazovoy promyshlennosti. Nauchnyye zapiski, no. 1, 1960. Dobycha i pererabotka nefti, 25-29.

TEXT: The results of a study of the chemical composition of the kerosene and gas-oil part of Dolinskaya and Bitkovo oils, using infra-red spectroscopy, are given. Spectra of narrow fractions containing benzene homologues obtained directly from the oil and also by catalytic dehydrogenization of hydrocarbons of the cyclohexane series were recorded in the region of 680-1040 $cm^{-1}$ with the aid of ВИКС-3 (VIKS-3) vacuum infra-red spectrometer. A globar heated by alternating current (7-8 A) to 900-1000°C served as the

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PHASE I BOOK EXPLOITATION SOV/4726

Kiyev. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut ugol'noy rudnoy, neftyanoy i gazovoy promyshlennosti

Nauchnyye zapiski, vyp. 1: Dobycha i pererabotka nefti (Scientific Reports of the State Scientific Research and Project Institute for the Coal, Mining, Oil, and Gas Industries, No. 1: Extraction and Processing of Petroleum) Kiyev, 1960. 91 p. 1,000 copies printed.

Sponsoring Agencies: UkrSSR Gosudarstvennaya planovaya komissiya Soveta Ministrov; Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut ugol'noy, rudnoy, neftyanoy, i gazovoy promyshlennosti "Ukrniiproyekt."

Editorial Council: V. P. Aksenov, S. Ye. Anushin, S. I. Balinskiy, V. Ya. Volchanskiy, D. I. Gol'tsev, V. S. Grinshteyn (Resp. Secretary), B. V. Dzbanovskiy, M. M. Zherbin (Chairman), A. F. Kotov, M. I. Logvinov, Yu. M. Ostrovskiy, L. M. Orzhekhovskaya, G. V. Prisedskiy, V. T. Sklyar (Deputy Chairman), N. Yu. Stasiv, and V. V. Tsaritsyn; Resp. Ed. for this Collection: V. T. Sklyar, Candidate of Chemical Sciences; Ed.: A. Novik.

Card 1/5

PURPOSE: This collection of articles is intended for petroleum researchers, engineers, and refiners.

COVERAGE: The collection of articles deals with the production and refining of petroleum. Individual articles discuss the effect of bound water on the depletion of petroleum deposits under dissolved gas conditions, the effect of pressure on the viscosity of degasified petroleum, the structure of high-molecular petroleum hydrocarbons, the asphaltene and tar components of Carpathian crudes and menilite shale asphalts, and the aliphatic composition of alcohols produced by selective hydrogenation of the CO and $H_2$ product of synthesis. Other articles describe the carbamide dewaxing method for filtrates of wax distillates, the production of flotation agents with the use of oxidized petrolatum, and the investigation of six-membered aromatic and naphthenic hydrocarbons by means of infrared absorption spectra. The remaining articles are on the relations of pressure-volume-temperature-ethylene and on the phase equilibrium in ethylene-n-hexane, ethylene-cyclohexane, and ethylene-benzene systems. Specific volumes and compression coefficients at

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PETROLEUM REFINING



Card 3/ 5



Card 4/5

transmitted either to a recorder or to an oscillograph. A block scheme of this measuring system is given. After half an hour's pre-heating the amplification coefficient of the system remains constant (variation $\leq 0.5\%$). For research work the measuring device is used together with a spectrometer of the type VIKS-M3, and for periodical controls in industry, together with a spectrometer of the type VIKS-M4 (both devices were constructed at the IFAN UkrSSR). There are 1 figure and 4 Soviet references.

7 (3), 24 (7)

AUTHORS: Mal'ney, A. F., Yesel'son, M. P., Kremenchugskiy, L. S. SOV/48-23-10-28/39

TITLE: A Measuring Device for the Infrared Spectrometer

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 10, pp 1246-1247 (USSR)

ABSTRACT: Infrared spectrometers are being used to an increasing extent in chemistry, petroleum refineries (automatic control of the technological cycle) and for research work in works laboratories. In the present paper a measuring system for such a device is briefly described. The device consists essentially of a bolometer bridge, a pre-amplifier, the main amplifier with synchronous detector, a modulator-generator with phase inverter and a feeding block. Radiation is first interrupted by a modulator (constructed together with S. Z. Shul'ga) (20 cycles), after which it passes through a monochromator and reaches the receiver. The latter is a nickel bolometer developed at the Institut fiziki AN SSSR (Institute of Physics of the AS USSR). The next stage is the preamplifier, from which the pulses reach the main amplifier block the elements of which are briefly discussed. The emerging signals may be

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A Vacuum Infrared Spectrometer for Works Control and for the Determination of Oil in Petroleum Products According to the Absorption Spectra

SOV/48-23-10-27/39

samples was measured relatively to a standard filtrate containing 97% of oil. The accuracy of measurements (error: ±0.5%) suffices for the intermediate operational control of petroleum products. The device was produced at the laboratory of a West-Ukrainian plant. There are 2 figures and 1 Soviet reference.

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Y (3), 24 (7)

AUTHORS: Mal'nev, A. F., Puchkovskaya, G. A. SOV/48-23-10-27/39

TITLE: A Vacuum Infrared Spectrometer for Works Control and for the Determination of Oil in Petroleum Products According to the Absorption Spectra

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 10, pp 1244-1245 (USSR)

ABSTRACT: The present paper briefly describes the infrared spectrometer of the type VIKS-4. A photograph of the device is shown, and figure 1 shows the optical system. No data are given with respect to the spherical optics. The monochromator is in a metal cylinder, which has a wall thickness of 10 mm. A nickel bolometer serves as a radiation receiver. A method was worked out, which permits determination of oil in petroleum products. It is based upon measuring the relative light absorption in the substance in the range 7.3 $\mu$, and makes it possible to reduce the time for analysis considerably. The band at 7.3 $\mu$ corresponds to the symmetric deformation vibrations of the $CH_3$ group. The oil content in percents is determined according to a calibration curve. Absorption in the investigated

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contained more ramified paraffins than that from 310. The petroleum of the former contained more aromatic, and that of the latter more paraffin-hydrocarbons. There are 5 references, 3 of which are Soviet.

Investigation of the Composition of the High Molecular Hydrocarbon Fractions of Petroleums of the Bitkovskoye Deposit by Means of Infrared Absorption Spectra

SOV/48-23-10-8/39

nAZh). The fraction PNZh was further treated with carbamide and thiocarbamide and four components were obtained. The spectra were recorded in the range 2-15$\mu$ by means of the vacuum infrared spectrometer of the type VIKS-3 (sample thickness 50 - 55$\mu$). In the following, a number of details concerning the spectra of the investigated fractions are given. The KT-spectra showed intense bands at 3.4 - 3.5, 6.82, 13.72 and 13.89$\mu$ (corresponding to the oscillations of the $CH_2$-groups) and weak bands ($CH_3$) at 6.92 and 7.25$\mu$. The n-paraffins were characterized by the intense band at 13.89, the NKT-fraction by the 7.25$\mu$-band as well as that with 13.89$\mu$. The aromatic fractions had the following bands: 1AZh: 6.2, 122, 13.4, 13.8 and 14.3$\mu$ (intense) and 9.6, 11.4 and 12.8$\mu$ (weak). 2AZh: 6.2, 11.4, 12.2 and 13.4 as well as 12.8, 13.8 and 14.3$\mu$ (weak) nAZh: 6.2, 11.4 and 13.4 as well as 9.6, 11.4 and 13.4$\mu$. The investigation results showed that the petroleums obtained from the various boreholes differ from one another. Thus, the T-fraction from the borehole 350

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11(4),7(3),24(7) SOV/48-23-10-8/39

AUTHORS: Mal'nev, A. F., Sklyar, V. T., Mikhlina, I. M., Puchkovskaya, G. A., Shulyak, L. I., Shevchenko, Ye. F.

TITLE: Investigation of the Composition of the High Molecular Hydrocarbon Fractions of Petroleums of the Bitkovskoye Deposit by Means of Infrared Absorption Spectra

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 10, pp 1192-1193 (USSR)

ABSTRACT: The present investigation was carried out in collaboration with the laboratoriya geokhimii nefti Ukr. NIGRI (Laboratory for Petroleum Chemistry of the Ukr. NIGRI). Investigations were carried out of petroleums obtained from the boreholes 300, 310 and 350 of the Bitkovskoye deposit in the western Ukraine. First, the solid fraction T was separated at 0 and -18°, and later the aromatic fraction AT was separated according to the method of Chernozhukov and Kazakova (Ref 1). The remainder of the solid fraction OT was separated by carbamide complex formation (complex-forming part KT, - non-complex-forming part NKT). The remaining liquid fraction was chromatographically separated into a paraffin naphthene fraction PNZh and a mono-, bi-, and poly-cyclic aromatic hydrocarbon-containing fraction (1AZh, 2AZh and

Card 1/3

MAL'NEV, A.F.[ Mal'niev, A.F.]; KREMENCHUGSKIY, L.S. [Kremenchugs'kyi, L.S.]

Device for measuring the parameters of electromagnetic radiation receivers. Ukr.fiz.zhur. 4 no.4:522-523 Jl-Ag '59.
(MIRA 13:4)

1. Institut fiziki AN USSR.
(Electromagnetic waves--Measurement)

MAL'NEV, A.F. [Mal'niev, A.F.]; KREMENCHUGSKIY, L.S. [Kremenchuhs'kyi, L.S.]

Infrared analyzers and their application to the automation of production processes. Ukr. fiz. zhur. 4 no.3:277-292 My-Je '59. (MIRA 13:2)

1. Institut fiziki AN USSR.
(Infrared rays--Industrial applications)

MAL'NEV, A.F. [Mal'niev, A.F.]; PUCHKOVSKAYA, G.A. [Puchkivs'ka, H.O.]

Determining the concentration of "oil" in petroleum products by means of infrared absorption spectra [with summary in English]. Ukr. fiz. zhur. 3 no.6:783-787 N-D '58. (MIRA 12:6)

1. Institut fiziki AN USSR.
(Petroleum products--Spectra)

MAL'NEV, A.F. [Mal'niev, A.F.]

Infrared vacuum spectrometer for production control in plants [with summary in English]. Ukr. fiz. zhur. 3 no.6:779-782 N-D '58. (MIRA 12:6)

1. Institut fiziki AN USSR.
(Spectrometer) (Petroleum--Refining)

The Main Principles of Recording of Spectra, Using Infra-Red Spectrophotometers (A Review)

(Refs.189 and 190). It is generally believed that the spectrophotometers using the "null" method are the most reliable. At the present time there is a noticeable tendency to replace mechanical parts in the measuring part of the spectrophotometer by the equivalent electrical circuits. However, this group is not very numerous as yet (Refs.77, 89, 97 and 99). There are 17 figures, no tables and 195 references, most of which are Western.

ASSOCIATION: Institut fiziki AN USSR (Institute of Physics of the Academy of Sciences USSR)

SUBMITTED: May 9, 1957.

1. Infrared spectrophotometers--Development 2. Infrared spectrophotometers--Applications 3. Infrared spectrophotometers--Performance 4. Infrared spectrophotometers--Equipment

The Main Principles of Recording of Spectra, Using Infra-Red Spectrophotometers (A Review)

are then recorded either by a pen recorder or on a CRO screen. The advantage of spectrophotometers as compared with spectrometers is their independence of changes in the intensity of the radiation emitted by the source, the sensitivity of the receiver and the measuring apparatus. In the present paper the main methods of recording of spectra using spectrophotometers are described and are classified as follows:
(1) The compensation method or "null method", as used by Hardy (Ref.37), White and Liston (Refs.8-11), Malyshev et al (Refs.20, 21, 27 and 55), Terenin et al (Ref.53), and others;
(2) The "two beam" method as used by Daniel and Brackett (Ref.72), Savitsky and Halford (Ref.65), and others;
(3) The phasometric method suggested by Bianov-Klyukov (Refs. 99-103), and also by Golay (Ref.104);
(4) The method using a memory-device, as used by Avery (Ref. 106), Donner (Ref.109), Mal'nev et al (Ref.107), and others.
The problem of accuracy and reproduceability has been considered by many authors (Refs.141-164) but there is a need for fundamental work on the comparison of different types of spectrophotometers. Generally speaking, spectrophotometers based on different principles give relatively the same results

The Main Principles of Recording of Spectra, Using Infra-Red Spectra Photometers (A Review)

of chemical problems and were then widely used in industrial laboratories. At the same time infra-red analysers of the non-dispersive and dispersive types were developed for work in industry, where they were used for continuous control purposes and the control of the manufacturing cycle. Fast operating spectrometers and spectrophotometers were produced which were used to study reaction kinetics which recorded spectra over time intervals comparable with the time taken by the process ($10^{-5}$ - 1 sec). Considerable attention was given to the construction of spectrophotometers. In these instruments the radiation from the source was divided into two beams, one of which (the "specimen beam") is passed through a vessel containing the specimen under investigation and the other (the "comparison beam") is passed through a comparison vessel containing a substance whose spectrum it is desired to exclude from the spectrum of the specimen. The ratio of the intensities of the two beams or their logarithms

SOV-120-58-1-1/43

AUTHORS: Mal'nev, A. F., Yesel'son, M. P., Kremenchugskiy, L. S.

TITLE: The Main Principles of Recording of Spectra, Using Infra-Red Spectro-Photometers (A Review) (Osnovnyye printsipy registratsii spektrov v infrakrasnykh spektrofotometrakh - Obzor)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1958, Nr 1, pp 3-16 (USSR)

ABSTRACT: In recent years infra-red spectroscopy has become important in connection with the solution of industrial and analytical problems. The possibility of application of infra-red spectroscopy to analytical problems was first established in 1881, when Ebney and Festing discovered that all the hydrocarbons absorb radiation of wavelength $\sim 3.4\ \mu$. During the years 1905 to 1908 investigations of hydrocarbons have led to the discovery of other bands characteristic of the functional groups (c-H, OH etc). However, experimental difficulties prevented further development of the methods of infra-red analysis. The prototype of contemporary infra-red spectrometers and spectrophotometers is the "ultra-red spectrograph" constructed by P. N. Lebedev (Refs.1-3). Because of their sensitivity, speed and accuracy, the methods of infra-red analysis were applied from the very outset to the solution

Card 1/4

MAL'NEV, H.F.

PRIKHOT'KO, A.F.

24(7) PHASE I BOOK EXPLOITATION SOV/1365

L'vov. Universytet

Materialy X Vsesoyuznogo soveshchaniya po spektroskopii. t. 1: Molekulyarnaya spektroskopiya (Papers of the 10th All-Union Conference on Spectroscopy. Vol. 1: Molecular Spectroscopy) [L'vov] Izd-vo L'vovskogo univ-ta, 1957. 499 p. 4,000 copies printed. (Series: Its: Fizychnyy zbirnyk, vyp. 3/8/)

Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po spektroskopii. Ed.: Gazer, S.L.; Tech. Ed.: Saranyuk, T.V.; Editorial Board: Landsberg, G.S., Academician (Resp. Ed., Deceased), Naporent, B.S., Doctor of Physical and Mathematical Sciences, Fabelinskiy, I.L., Doctor of Physical and Mathematical Sciences, Fabrikant, V.A., Doctor of Physical and Mathematical Sciences, Kornitskiy, V.G., Candidate of Technical Sciences, Rayskiy, S.M., Candidate of Physical and Mathematical Sciences, Klimovskiy, L.K., Candidate of Physical and Mathematical Sciences, Milyanchuk, V.S., Candidate of Physical and Mathematical Sciences, and Glauberman, A. Ye., Candidate of Physical and Mathematical Sciences.

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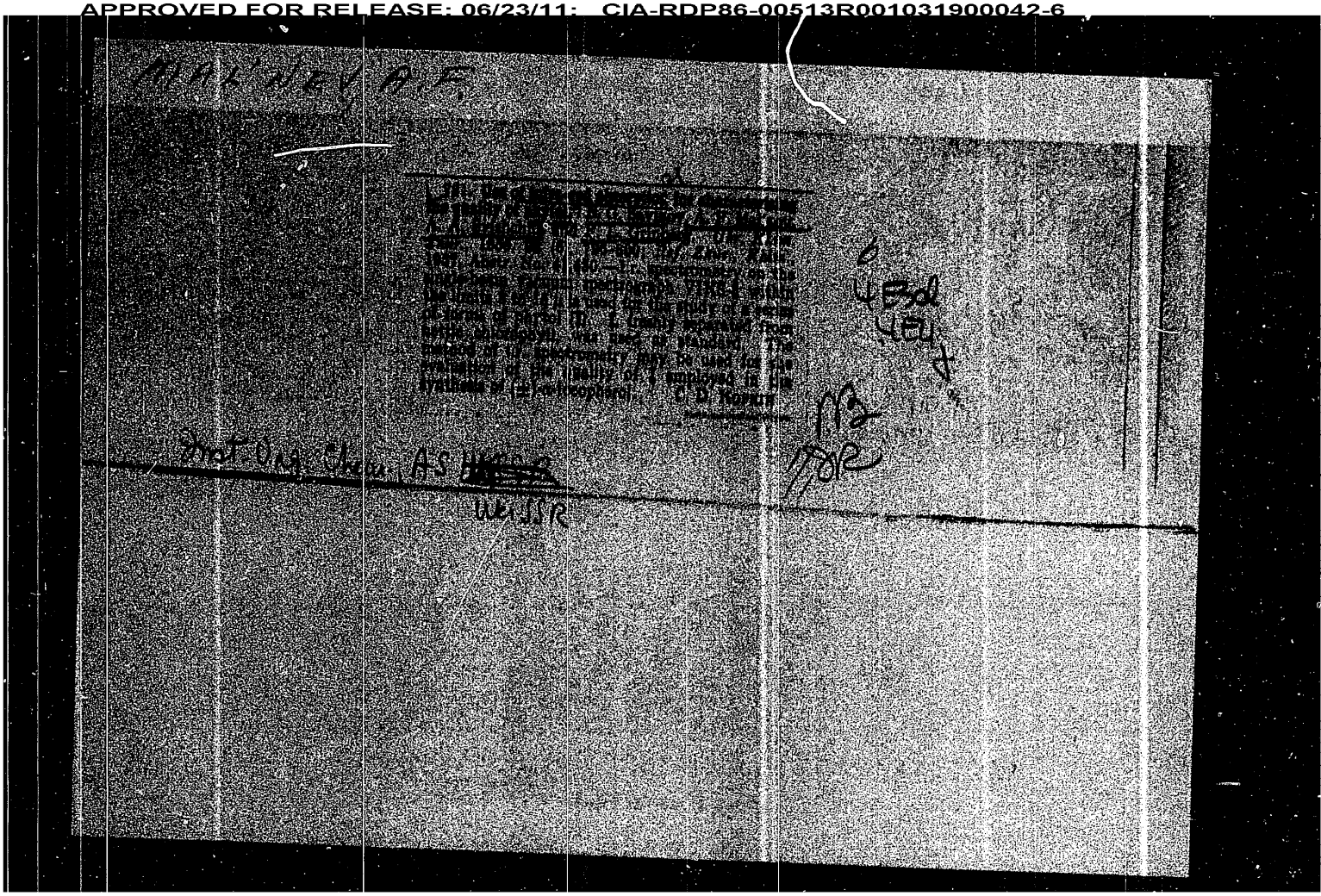
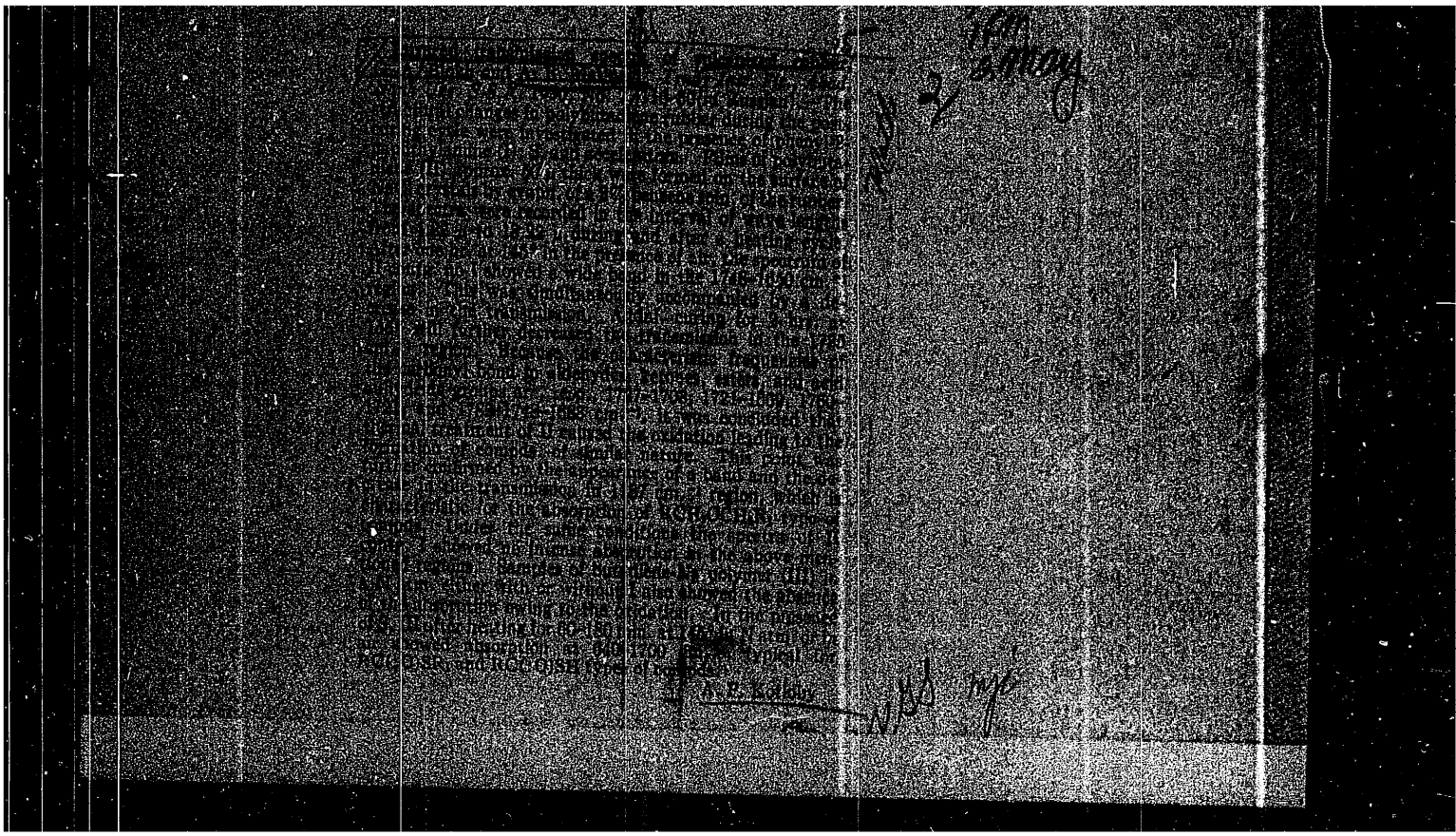
Card 2/4





their Application--Crude rubber, natural and synthetic. Vulcanized rubber

Abs Jour: Ref Zhur-Khimiya, No 3, 1957, 9781

Abstract: No such bands were observed in the spectra of the vulcanized articles or in the spectra recorded in an atmosphere of $N_2$. Bands characteristic of oxygen compounds were not present in the spectra of mixtures of butadiene-nitrile rubber and S. Oxidation bands were also absent from the spectra of press-vulcanized natural rubber specimens in contrast to the spectra of such specimens vulcanized at atmospheric pressure in contanct with the air. The spectroscopic investigations confirm the active influence of the accelerators on the structural changes occuring in natural rubber during vulcanization.

Card 3/3

USSR/Chemical Technology. Chemical Products and Their Application -Crude rubber, natural and synthetic. Vulcanized rubber I-22

Abs Jour: Ref Zhur-Khimiya, No 3, 1957, 9781

Abstract: wise heating for 66-180 min at 145° in air or $N_2$ at atmospheric pressure. The spectroscopic investigations were carried out at ~ 20°. The films were later subjected to further heating at 145° for 120 min and their spectra again recorded. The vulcanization of the rubber mixtures was carried out in special press-molds for 6 hours at 145°. The heating of the films and of mixtures from which the Neozon SKN-26 has been removed and the recording of the spectra were carried out simultaneously, i.e., at the preheating temperatures; the spectra were recorded again after cooling to ~ 20°. When a mixture of Na-butadiene rubber and S is heated for three hours with or without an antioxidant, the absorption spectra exhibit an intense band characteristic of oxygen-containing compounds.

Card 2/3

MAL'NEV, A. F.

USSR/Chemical Technology. Chemical Products and Their Application-Crude rubber, natural and synthetic. Vulcanized rubber I-22

Abs Jour: Ref Zhur-Khimiya, No 3, 1957, 9781

Author : Blokh, G. A. and Mal'nev, A. F.
Inst : Not given
Title : The Infrared Spectra of Natural and Synthetic Rubbers

Orig Pub: Legkaya prom-st, 1956, No 4, 38-44

Abstract: Structural changes occurring in rubbers during sulfur and thermal vulcanaization have been investigated with a view towards the clarification of the effect of $O_2$, S, and of accelerators. 2% benzene solutions of natural rubber, Na-butadiene [TN: Buna S], and butadiene-nitrile rubber with and without antioxidants (Neozon) and accelerators (Captax, thiuram, DPG) were prepared. Films prepared from these solutions were subjected to step-

Card 1/3

D'YACHENKO, V.E.; MAL'NEV, A.F., kandidat fiziko-matematicheskikh nauk.

Theory of stationary processes in a thermoelement. Nauk.zap.Kiev.un. 8 no.4:69-77 '49. (MLRA 9:10)

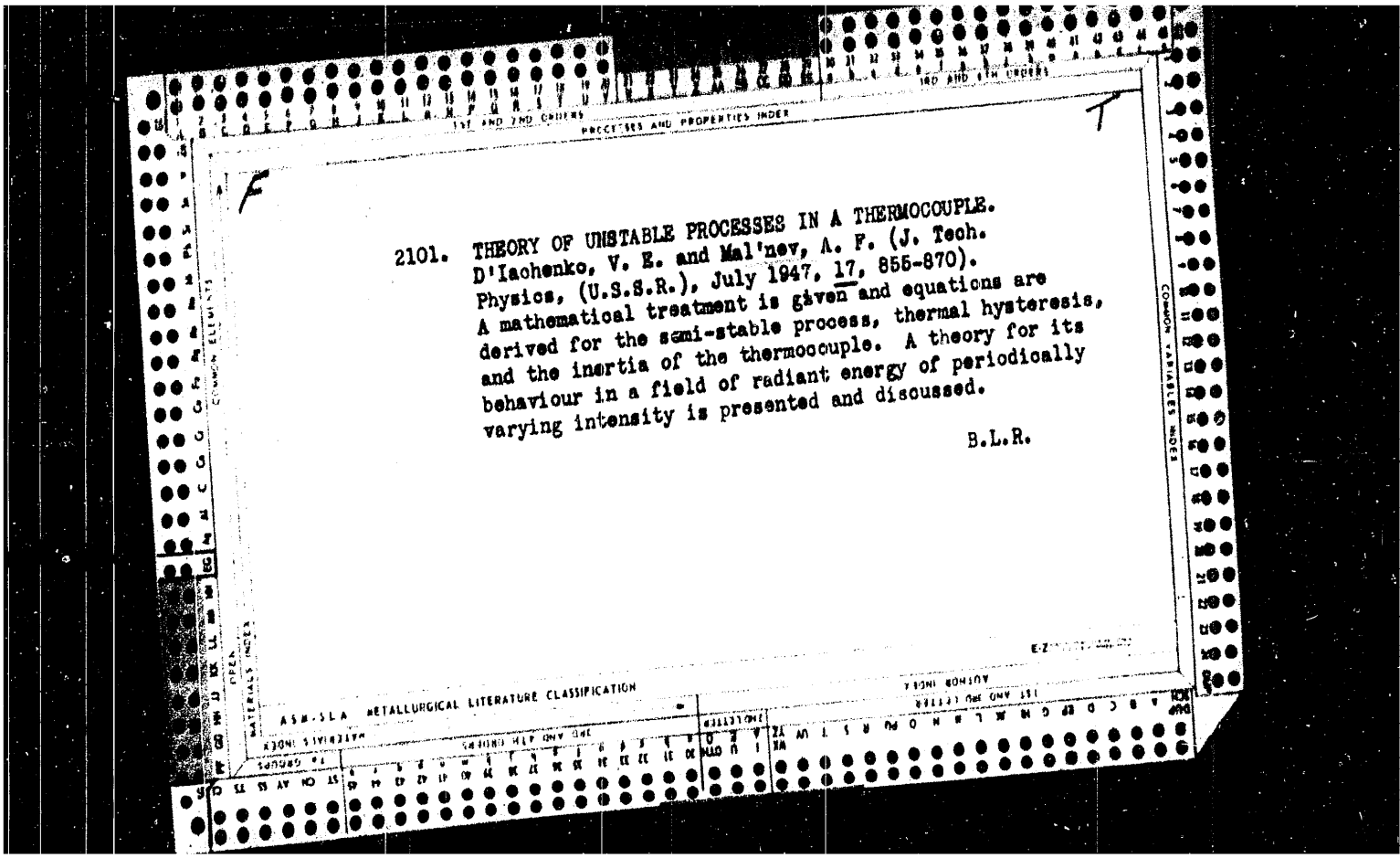
1.Chlen-korrespondent Akademii nauk URSR (for D'yachenko).
(Thermocouples)

MAL'NYEV, O. F.

D'YACHENKO, V.Ye.; MAL'NYEV, O.F., kandidat fiziko-matematichnikh nauk.

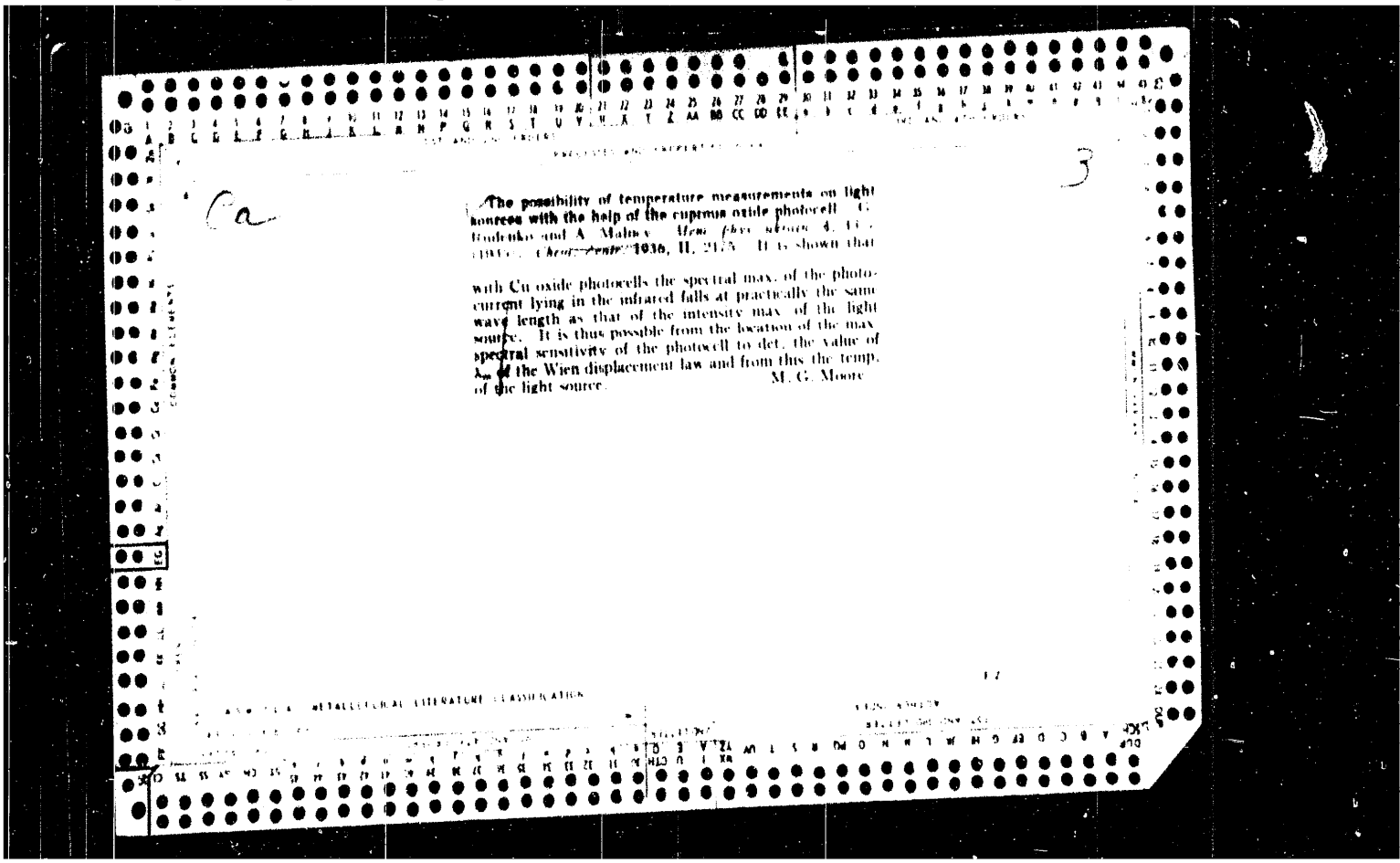
Smooth flow with an open surface past cylindrical bodies. Nauk.zap. Kiev.un. 7 no.4:135-150 '48. (MLRA 10:5)

1.Chlen-korespondent AN URSR (for D'yachenko)
(Fluid dynamics)



2101. THEORY OF UNSTABLE PROCESSES IN A THERMOCOUPLE.
D'Iachenko, V. E. and Mal'nev, A. F. (J. Tech.
Physics, (U.S.S.R.), July 1947, 17, 855-870).
A mathematical treatment is given and equations are
derived for the semi-stable process, thermal hysteresis,
and the inertia of the thermocouple. A theory for its
behaviour in a field of radiant energy of periodically
varying intensity is presented and discussed.

B.L.R.



**The possibility of temperature measurements on light sources with the help of the cuprous oxide photocell.** G. Rudenko and A. Malnev. *Zhur. Tekh. Fiziki* (*J. Tech. Phys.*) 1936, II, 2173. It is shown that with Cu oxide photocells the spectral max. of the photocurrent lying in the infrared falls at practically the same wave length as that of the intensity max. of the light source. It is thus possible from the location of the max. spectral sensitivity of the photocell to det. the value of $\lambda_{max}$ of the Wien displacement law and from this the temp. of the light source. M. G. Moore

MALNASY, Jozsef, dr.; GAAL, Magdalona, dr.

Primary carcinosarcoma of the fallopian tube. Magy.noorv.lap. 26 no.6:365-368 N '63.

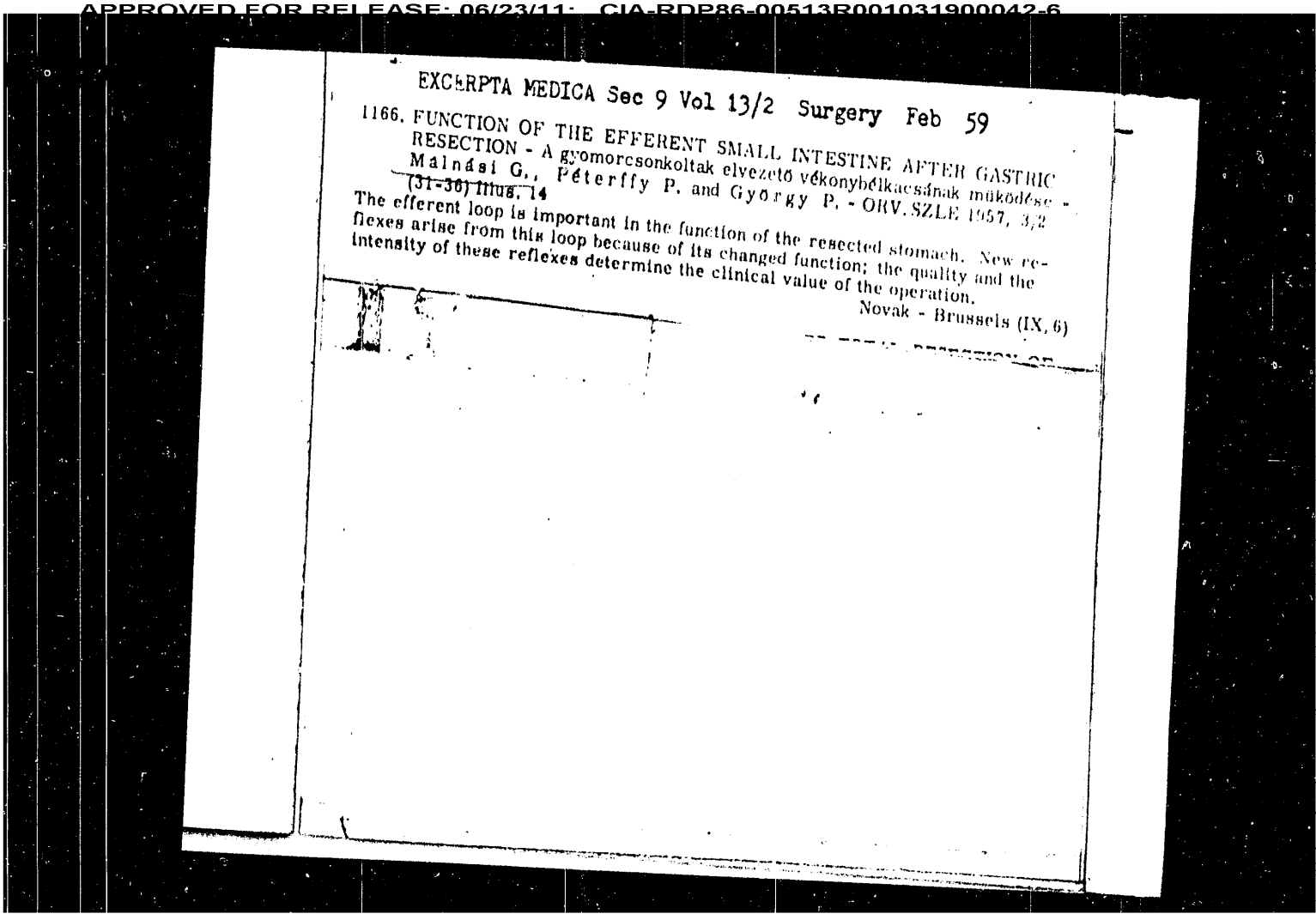
1. Az Orszagos Testneveles Sportegeszsegügyi Intezet (Igazgato-főorvos: Hajdu Ferenc dr.) Nögyogyaszati Osztalyanak (Főorvos: Salacz Pal dr. kandidatus) es Prosecturajanak (Vezeto: Gaal Magdolna Dr.) Közlemenye.

MALNASI, G., dr.; GYORGY, P., dr.; BOROS, M.

Anatomoclinical analysis of cases of peptic ulcer with fatal outcome. Med. inter., Bucur 13 no.5:759-769 My '61.

1. Lucrare efectuata in Clinica I medicala din Tirgu Mures, director: prof. P. Doczy.

(PEPTIC ULCER complications)



EXCERPTA MEDICA Sec 9 Vol 13/2 Surgery Feb 59

1166. FUNCTION OF THE EFFERENT SMALL INTESTINE AFTER GASTRIC RESECTION - A gyomorcsonkoltak elvezető vékonybélkacsának működése - Malnási G., Péterffy P. and György P. - ORV. SZLE 1957, 3/2 (31-36) Illus. 14

The efferent loop is important in the function of the resected stomach. New reflexes arise from this loop because of its changed function; the quality and the intensity of these reflexes determine the clinical value of the operation.

Novak - Brussels (IX, 6)

HADNAGY, Csaba; OBAL, Ferenc; DOCZY, Pal; SZABO, Istvan; MALNASI, Geza

Effect of substances influencing India ink storage of the reticuloendothelial system on antibody formation. Kiserletes orvostud. 8 no.4:345-350 July 56.

1. Marosvasarhelyi Vertarolo es Veratomleszto Kozpont es a Marosvasarhelyi Orvostudomanyi es Gyogyszereszeti Felsooktatasi Intezet Elettani Laboratoriuma.

(RETICULOENDOTHELIAL SYSTEM, physiol.
colloidopexy, eff. of various substances influencing colloidopexy on antibody form. in exper. animals (Hun))
(ANTIGENS AND ANTIBODIES
antibody form., eff. of various substances influencing colloidopexy in reticuloendothelial system (Hun))

MALNAR, M.

Distr: 4E3d/4E3b/4E2c(j)

*p*-Bisphenylmercuribenzene. M. Malnar and D. Grdenic (Univ. Zagreb, Yugoslavia). *J. Chem. Soc.* 1959, 3630.—The Grignard reaction of *p*-bisbromomagnesiobenzene with phenylmercuric bromide was used for the prepn. of *p*-bisphenylmercuribenzene (I). To prep. the dimagnesium compd., the Houben method [*Chem. Ber.* 38, 3706(1905)] was used. It was found that the amt. of Mg dissolved could be increased by a longer heating period and less solvent. The yield of I, m. 143° (PhMe), was never higher than 10% of the theoretical amt. The main product was an insol. polymer.

S. A. Liebman

MALNAR, M.

Polyoxo compounds. IV. A synthesis of some α,γ,δ,ε-tetraketones. D. Kerlević, M. Malnar, and T. Tomić (Univ. Zagreb, Yugoslavia). *Croat. Chem. Acta* 26, 67–9 (1954) (in English). cf. *C.A.* 47, 2920*d*; following abstr.—To an ice-cold soln. of 0.2 mole NaOEt in 200 ml. $Et_2O$ a mixt. consisting of 0.2 mole of a Me ketone RCOMe (R is alkyl or aryl), 0.1 mole $(CO_2Et)_2$ and 100 ml. $Et_2O$ was gradually added during 5 min. with shaking. The mixt. was let stand for 4 days, the sepd. Na salt filtered off, triturated with ice and 20% HCl and the crude $RCOCH_2COCOCH_2COR$ I crystd. from glacial AcOH to give following pure I (R, m.p., % yield, and m. p. of quinoxaline deriv. given): *p*-$ClC_6H_4$, 229°, 94, 226°; *p*-$BrC_6H_4$, 217°, 89, 244°; *p*-$MeOC_6H_4$, 194°, 92, 192°; 1-$C_{10}H_7$, 199°, 78, 251°; 2-$C_{10}H_7$, 210°, 76, 227°. A mixt. of 55 g. iso-BuCOMe (II) and 32 g. $(CO_2Et)_2$ was added simultaneously to 10.5 g. Na wire covered with anhyd. $Et_2O$, the mixt. refluxed 1 hr., then 15 g. fresh II added, the mixt. refluxed again 3 hrs., kept overnight, evapd. *in vacuo* at 40°, the residue (73 g. Na salt of I, R = iso-Bu) finely ground, triturated with 10% HCl at 0°, and crystd. from EtOH to give 59% pure I (R = iso-Bu), m. 74–75°; quinoxaline deriv., m. 147°. VI. A synthesis of 1,6-bis(2-thienyl)-1,3,4,6-hexanetetrone. B. Gašpert and S. Ghyczy (Univ. Zagreb, Yugoslavia). *Ibid.* 101–2.—To 100 ml. anhyd. $Et_2O$ were added 4.4 g. Na and 9.2 ml. abs. EtOH; the mixt. let stand 12 hrs., cooled to 0°, a soln. of 28 g. 2-acetylthiophene and 14.6 g. $(CO_2Et)_2$ in 50 ml. $Et_2O$ added dropwise during 5 min., let stand 2 days, the sepd. Na salt filtered off, and triturated with ice and 10% HCl yielded 25.1 g. 1,6-bis(2-thienyl)-1,3,4,6-hexanetetrone; analytical sample, m. 200–1° (from EtOAc). VII. A note on *sym*-dibenzoylacetone. P. Mildner (Univ. Zagreb, Yugoslavia). *Ibid.* 113–14(1954) (in English).—By condensation of $NaCH(NO_2)(CHO)_2$ (I) with 1,5-diphenyl-1,3,5-pentanetrione (II), 4,2,6-$O_2N(Bz)_3C_4H_3OH$ (III) was obtained. A soln. of 2.95 g. I in 50 ml. 0.5*N* NaOH was added to 5 g. II in 25 ml. EtOH and 10 ml. *N* NaOH, the mixt. shaken at room temp. 2 hrs., and kept 2 days to yield 4.4 g. Na salt (IV) of III, m. 300° (from EtOH); the filtrate satd. with $CO_2$ gave 0.75 g. II. A suspension of finely powdered IV in $H_2O$-$CHCl_3$ acidified with HCl to pH 3 and extd. 12 hrs. in a continuous extractor with $CHCl_3$ yielded yellow crystals of III; analytical sample sublimed at 170°/0.02 mm., m. 163° (from $CHCl_3$-petr. ether). With $FeCl_3$ soln. in EtOH it gives an orange-red coloration. E. G.

ADYSHEV, M.M.; MALMURZAYEV, K.Ye.; KOROLEV, V.G.

Stratigraphy of Cambrian and Ordovician sediments in the Saryjaz region (central Tien Shan). Mat. po geol. Tian'-Shania no.3:49-63 '62. (MIRA 16:7)

(Tien Shan--Geology, Stratigraphic)

MAL'MSTREM, A.I.; FEOKTISTOV, A.P., retsenzent; NIKITINYKH, N.M., nauchnyy redaktor; SOKOLOVA, L.V., tekhnicheskiy redaktor

[Electric arc welding of copper] Elektricheskaia dugovaia svarka medi. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. i sudostroit. lit-ry, 1954. 72 p. (MLRA 7:8)
(Electric welding) (Copper--Welding)

MAL'MGREN, N.; RAYEVSKAYA, Ye.; SHEKHTER, I.Yu., red.; GAUS, A.L., izdat.red.; MATAPOV, M., tekhn.red.

[Collection of exercises in translating German scientific and technical literature] Sbornik uprazhnenii po perevodu nemetskoi nauchno-tekhnicheskoi literatury. Izd.2. Moskva, Izd-vo lit-ry na inostr.iazykakh, 1959. 189 p.

(MIRA 12:7)

(German language--Translating)
(Science--Translating)

ACC NR: AP7004550 SOURCE CODE: UR/0374/66/000/004/0519/0534

AUTHOR: Malmeyster, A. K.

ORG: Institute of the Mechanics of Polymers, AN LatSSR, Riga (Institut mekhaniki polimerov, AN LatSSR)

TITLE: Geometry of strength theories

SOURCE: Mekhanika polimerov, no. 4, 1966, 519-534

TOPIC TAGS: polymer physical property, tensor

ABSTRACT: Since polymer materials lose their strength in very different ways, a unified method of formally describing the limiting condition of polymers is desirable. This work proposes a geometrical method of such a description based on a surface of stress or strain tensors. Geometrical theories of strength are reviewed briefly. Orig. art. has: 8 formulas. [JPRS: 38,961]

SUB CODE: 11 / SUBM DATE: 01Mar66 / ORIG REF: 015

Card 1/1 UDC: 678:539.4.011

L 24756-66 EWT(d)/EWT(m)/EWP(w)/EWP(t)/ETI/EWP(k)/EWP(b)/EWA(c) IJP(c) WW/RM

ACC NR: AP6015553 SOURCE CODE: UR/0374/65/000/004/0012/0027

AUTHOR: Malmeyster, A. K.--Malmeister, A. (Riga)

ORG: none

TITLE: Fundamentals of the theory of the local character of deformations (Review 1)

SOURCE: Mekhanika polimerov, no. 4, 1965, 12-27

TOPIC TAGS: plasticity, material deformation, shell structure, shell structure stability

ABSTRACT: On the basis of a survey of 28 literature references, a study is made of the interrelationships of the stress tensor, deformation tensor, temperature, time and material properties for the most general case applicable to complex loading, such as occurs under actual conditions of breakdown or loss of stability wherein the components of the stress tensor do not change in proportion to any one parameter. The same situation is encountered in micro-manifestations of material breakdown when the internal stresses and strains are redistributed in a complex manner before the yield point is reached. The phenomenological fundamentals of the theory of local character of deformations are discussed here in reference to several practical problems, such as the loss of stability of thin-walled rods and shells. The theory of local deformation is considered a variant of the theory of plasticity. Orig. art. has: 3 figures, 47 formulas, and 1 table. [JPRS]

SUB CODE: 13, 11 / SUBM DATE: 02Apr65 / ORIG REF: 028

Card 1/1 UVR

UDC: 678: 539.370

ACCESSION NR: AP4035741

working conditions so as to provide the theoreticians with new data. It will be also important to study the correlation between stresses and deformations by resolving both the stress and the resulting deformation into a number of components. The reinforcing of plastic materials should be given much attention because there exist vast possibilities in this field for utilizing organic fibers that could yield materials with properties different from those of fiberglass-reinforced plastics. Many difficulties will be encountered in solving some problems of solid state mechanics. However, the workers of the Institut mekhaniki polimerov, AN Latviyskoy SSR (Institute of Polymer Mechanics, Latvian Academy of Sciences) proposed a new simplified approach to these problems--the so-called "statistical theory of the local character of deformation", which establishes a correlation between load transmission pattern and the progress of deformation.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 01Jun64 ENCL: 00

SUB CODE: OC NO REF SOV: 000 OTHER: 000

Card 2/2

ACCESSION NR: AP4035741 S/0197/64/000/004/0025/0029

AUTHOR: Malmeyster, A. (Academician)

TITLE: Development of the theory of deformation in polymers (Contribution to the Annual Meeting of the Academy of Sciences, Latvian SSR, 24 February 1964)

SOURCE: AN LatSSR. Izvestiya, no. 4, 1964, 25-29

TOPIC TAGS: polymer material, polymer deformation, polymer deformation theory

ABSTRACT: In December 1963, the plenary session of the Central Committee of the Soviet Union's Communist Party set 1970 production goals for synthetic fibers at 1.35 million tons, and for plastic compounds (including rubber) and synthetic resins at 3.5-4.0 million tons. The importance of developing new properties in new synthetic materials was stressed. The efforts of science and industry up to now were centered on synthesis and production of polymers. Studies of breakup and failures of these materials under working conditions were neglected. The currently available mathematical foundations for solid state mechanics are inadequate to cope with the problems arising in practice, and it will be necessary to accumulate a large amount of information on the performance of the polymer materials under

Card 1/2

ZILAUTSIS, A. [Zilaucis, A.]; MALMEYSTER, A. [Malmeisters, A.]

Law of simple loading in the theory of local deformation.
Vestis Latv ak no.2:69-74 '62.

$$\begin{cases} \gamma''(\tau_z, \tau_{*\tau}) = 0; \quad \tau > \tau_{*\tau} = \tau_* \cos(\tau_z, \tau_*); \\ \gamma''(\tau_z, \tau_{*\tau}) = \sum_n a_n(\tau^n - \tau''_{*\tau}); \quad \tau > \tau_{*\tau}. \end{cases} \qquad (22)$$

applies and the previous history of the load is taken into consideration. The theory of local deformations renders it possible to study the details of the consolidation process (Ref. 10: A. K. Malmeyster. Plasticheskiye deformatsii neuprochnennogo i uprochnennogo kvaziizotropnogo tela (Plastic deformations of non-consolidated and consolidated quasi-isotropic bodies). Sb. "Issledovaniya po betonu i zhelezobetonu", vyp. 6-y, 1961. There are 10 references: 9 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: Ref. 4: S. B. Batdorf and Bernard Budiansky. A mathematical theory of plasticity based on the concept of slip. National advisory committee for aeronautics. Technical note Nr. 1871, 1949.

ASSOCIATION: Institut stroitel'stva i arkhitektury AN Latviyskoy SSR (Institute of Construction and Architecture of the AS Latviyskaya SSR)

Fundamentals of the theory ...

may be solved, in principle, by regarding the mutual changes of two surfaces, the stress surface and the elasticity interface occurring under load. In the case of a simple load $d\sigma_{mn}(t)/dt \geqslant 0$ (23) the plastic deformation at an arbitrary time may be calculated from the relation $e^{p}_{ij} = 1/S \int\int_{S} \gamma(\tau) v_{ij}(z) ds$ (18) ($v_{ij}(z)$ is the weight function of the local deformation which depends on the direction cosines of the auxiliary coordinates) by using the function

$$\begin{cases} \gamma^{II}(\tau_z, \tau_*) = 0: \quad \tau > \tau_*, \\ \gamma^{II}(\tau_z, \tau_*) = \gamma^{I}(\tau_z) - \gamma^{I}(\tau_*) = \sum^{n} a_n(\tau_z^n - \tau^n{}_*); \tau_z \geqslant \tau_* \end{cases} \qquad (21).$$

If (23) does not hold, the plastic deformations are determined by stages. In this case the function

Card 4/6

Fundamentals of the theory ...

sposobnoy dvcynikovat'sya (Deformation of a coalescable medium). Sb. "Voprosy dinamiki i dinamicheskoy prochnosti", t. 3, Riga, 1955; Ref. 3: Uprugost' i neuprugost' betona (Elasticity and inelasticity of concrete). Riga, 1957) and the modification of the latter theory by G. V. Ukhov (Ref. 7: Variant teorii plastichnosti kvaziizotropnogo tela (A variant of the theory of plasticity of quasi-isotropic bodies). Sb. "Issledovaniya po betonu i zhelezobetonu", vyp. 4-y, Riga, 1959). The theory of gliding was substantially improved by the suggestion by T. Lin (Ref. 5: O svyazi mezhdu napryazheniyami i deformatsiyami v teorii skol'zheniya (The relation between the stresses and the deformations in the theory of gliding) Sb. perevodov "Mekhanika", 1960, № 4), to regard the three possible glide directions in one plane. The further development of this idea by the assumption of infinitely many possible glide directions leads over to the theory of plasticity of quasi-isotropic bodies. The theory of local deformations permits an expansion of the concept of the theory of plasticity. Here the basic idea of the stress surface and its changes under load takes the place of the load path. Instead of the classical concept of the flow surface, the more general concept of the function of local deformations is used. Questions concerning complex load

Fundamentals of the theory ...

statistics were applied. It is pointed out that the expression (9) is useless for a linear function of local deformations and becomes extremely involved in the case of a non-linear or discontinuous function. To facilitate calculations, certain approximations may be introduced if secondary factors are neglected. This is done in two ways, either by looking for the relation between the state of stress and the local deformation in vectorial form $\mathcal{E}_{mn} = f(\bar{\sigma}_z, \bar{\tau}_z)$ (10) (where $\bar{\sigma}_z$ and $\bar{\tau}_z$ are the vectors of the normal and tangential stress on the surface), or explicitly $\mathcal{E}_{mn} = f(\sigma_z, \tau_{zx}, \tau_{zy})$ (11); (where $\sigma_z$, $\tau_{zx}$, and $\tau_{zy}$ are the component vectors of the total stress on the surface. By comparing the theory of local deformations with previous publications in this field, listed in the following, it is evident that they only represent special cases of the theory of local deformations. The publications in question are the theoretical outlines by N. N. Afanas'yev (Ref. 1: Statisticheskaya teoriya ustalostnoy prochnosti metallov (Statistical theory of the fatigue strength of metals) ZhTF, 1940, 10, 19), the theory of gliding developed by Batdorf and Budiansky (Ref. 4, see below), the theory of plasticity of quasi-isotropic bodies developed by the author (Ref. 2. Deformatsiya sredy.

Card 2/6